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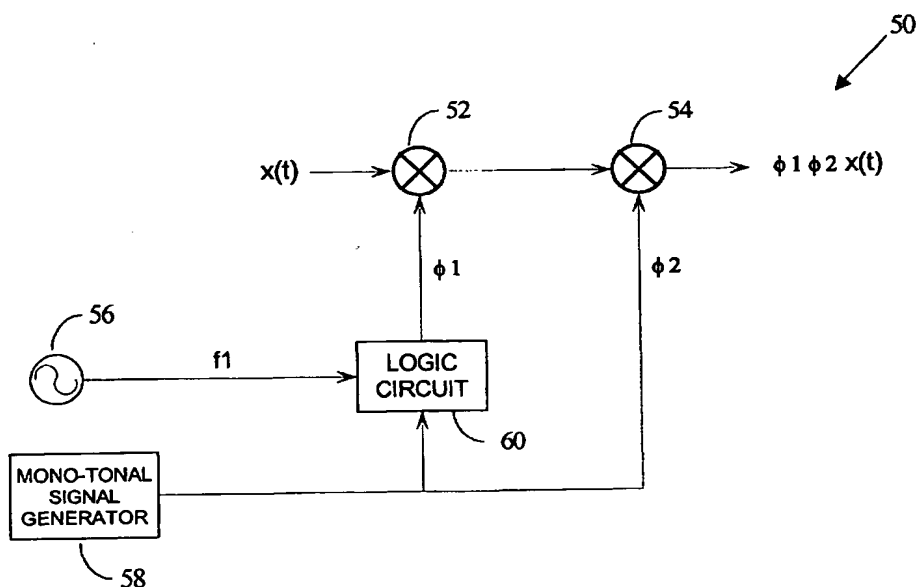
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(54) Title: METHOD AND APPARATUS FOR DOWN CONVERSION OF RADIO FREQUENCY (RF) SIGNALS



(57) Abstract: There is a need for an inexpensive, high-performance, fully-integrable, multi-standard transceiver, which suppresses spurious noise signals. The invention provides a topology that satisfies this need, using a first signal generator which produces an oscillator signal  $f_1$  and a second signal generator which produces a mono-tonal mixing signal  $\phi_2$ , where  $f_1$  is a multiple of the frequency of  $\phi_2$ ; and a logic circuit for generating a multi-tonal mixing signal  $\phi_1$ , where  $\phi_1 * \phi_2$  has significant power at the frequency of said local oscillator signal being emulated, neither of said  $\phi_1$  nor said  $\phi_2$  having significant power at the carrier frequency of said input signal  $x(t)$  or said LO signal being emulated.